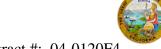
DEPARTMENT OF TRANSPORTATION

DIVISION OF ENGINEERING SERVICES Office of Structural Materials Quality Assurance and Source Inspection

Bay Area Branch 690 Walnut Ave.St. 150 Vallejo, CA 94592-1133 (707) 649-5453 (707) 649-5493



Contract #: 04-0120F4

Cty: SF/ALA Rte: 80 PM: 13.2/13.9

74.28 File #:

WELDING INSPECTION REPORT

Resident Engineer: Pursell, Gary **Report No:** WIR-012031 Address: 333 Burma Road **Date Inspected:** 01-Feb-2010

City: Oakland, CA 94607

Project Name: SAS Superstructure **OSM Arrival Time:** 750 **OSM Departure Time:** 1905 **Prime Contractor:** American Bridge/Fluor Enterprises, a JV

Contractor: Goodwin Steel, UK **Location:** Stoke-on-Trent, UK

CWI Name: Fred Hawksworth, Subcontracted CWI Present: Yes No

Inspected CWI report: Yes N/A **Rod Oven in Use:** Yes No No N/A Yes N/A **Electrode to specification:** No Weld Procedures Followed: Yes No N/A N/A **Qualified Welders:** Yes No **Verified Joint Fit-up:** Yes No N/A N/A Yes N/A **Approved Drawings:** Yes No **Approved WPS:** No Yes No N/A

Delayed / Cancelled: Bridge No: 34-0006 **Component:** Cable Band Castings

Summary of Items Observed:

The following report is based on METS Caltrans QA Inspector Mike Brcic's observations at Goodwin Steel Castings, Stoke-on-Trent, England, UK, on the above noted date and times.

REPAIR WELDING

- GG29432-6 (B8-1-M) This QA Inspector observed welder Adam Migas, welder ID AM80, performing Shielded Metal Arc (SMAW) process, 4mm, E7018-1 electrode, in the 1G, flat position. Parameters of WPS 04-0120F4B issue 5, were verified and followed, Amp average during observation was 171, Voltage was 24.3. Temperature of casting exceeded 170° Celsius (preheat) and was below 399° Celsius for an interpass temperature, these were the actual temperature limits verified by the use of temperature melting sticks. Travel Speed of 4mm electrode pass was 228.6mm/min. Excavation in work was identified as #2 (weld build up), classified as "Major", on the approved Weld Excavation Map.

- GG29443-1 (B11-2-F) This QA Inspector observed welder Adrian Barnett, welder ID# AB59, performing Shielded Metal Arc (SMAW) process, 3.2mm, E7018-1 electrode, in the 1G, flat position. Parameters of WPS 04-0120F4B issue 5, were verified and followed, Amp average during observation was 99, Voltage was 21.4. Temperature of casting exceeded 170° Celsius (preheat) and was below 399° Celsius for an interpass temperature, these were the actual temperature limits verified by the use of temperature melting sticks. Travel Speed was 124. 3mm/min. Excavation in work was identified as #2 on rope groove flange, classified as "Major", on the approved Weld Excavation Map.

WELDING INSPECTION REPORT

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MECHANICAL TESTING

The following tensile testing was performed by Goodwin Steel Castings Quality Control Technician, Mr. Martyn Hilditch. The testing was witnessed and completed today:

GG29422-8, Heat F7474 2nd PWHT

Yield Strength 425 N/mm² Ultimate Tensile Strength 583 N/mm² 26 % Elongation Reduction of area 56 %

GG29422-13, Heat C8057 2nd PWHT

Yield Strength 376 N/mm² Ultimate Tensile Strength 624 N/mm² Elongation 22 % Reduction of area 35 %

GG29427-3, Heat C7989 **PWHT**

Yield Strength 508 N/mm² Ultimate Tensile Strength 699 N/mm² 15 % Elongation Reduction of area 26 %

Specimen Failed due to low Elongation (minimum 22%), and low Reduction in Area (minimum is 35%) as setforth by ASTM A148 and contract documents.

GG29429-5, Heat F7580 **PWHT**

399 N/mm² Yield Strength Ultimate Tensile Strength 602 N/mm² Elongation 24 % Reduction of area 47 %

GG29429-7 Heat C8070 PWHT

Yield Strength 401 N/mm² Ultimate Tensile Strength 619 N/mm² Elongation 27 % Reduction of area 55 %

GG29429-11, Heat F7722 **PWHT**

Yield Strength 380 N/mm² Ultimate Tensile Strength 613 N/mm² Elongation 26 % Reduction of area 55 %

WELDING INSPECTION REPORT

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GG29436-1, Heat C7930 2nd PWHT

Yield Strength 445 N/mm² Ultimate Tensile Strength 593 N/mm²

Elongation 26 % 59 % Reduction of area

GG29451-4, Heat F7638 **PWHT**

Yield Strength 415 N/mm² 598 N/mm² Ultimate Tensile Strength

24 % Elongation Reduction of area 52 %

GG29449-3, Heat C8019 PWHT (loose block specimen)

Yield Strength 365 N/mm² 571 N/mm² Ultimate Tensile Strength

29 % Elongation Reduction of area 61 %

PREPAIR FOR DISPATCH TO GOODWIN INTERNATIONAL

The following castings were prepared for dispatch to Goodwin International for machining. The QA Inspector did a random check of four castings to confirm compliance to drawings and project specifications.

GG29419-2 (B2-1-F)*

GG29422-8 (B4-1-M)*

GG29429-5 (B7-1-F)*

GG29422-13 (B4-1-M)*

GG29429-5 (B7-1-F)

GG29436-1 (B9-1-M)

GG29449-3 (B15-1-F)

GG29451-4 (B16-1-F)

Unless otherwise noted, all observations reported on this date appeared to be in general compliance with applicable contract documents.

Summary of Conversations:

No significant conversations took place this day that this Caltrans METS Inspector was a party to.

Comments

This report is for the purpose of determining conformance with the contract documents and is not for the purpose of making repair or fit for purpose recommendations. Should you require recommendations concerning repairs or remedial efforts please contact Nina Choy, 1(510)385-5910, who represents the Office of Structural Materials for

^{*}Castings chosen for random general compliance to drawings and project specifications.

WELDING INSPECTION REPORT

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your project.

Inspected By: Brcic, Michael Quality Assurance Inspector

Reviewed By: Edmondson,Fred QA Reviewer